Grade 7 Mathematics I - Advanced Assessment

Second Semester Examination - July 2025

Subject: Mathematics - I
Class: 7
Duration: 2 periods
Date: .....

Candidate's name: .....
Admission no.: .....

Instructions to candidates:

- Answer all the questions in the spaces provided in this paper.
- Show your workings where necessary.
- You are not allowed to use calculators.
- Read each question carefully before attempting.

Part A: Each question carries 02 marks.
Part B: Each question carries 04 marks.
Part C: Each question carries 05 marks.

Part A

1. Find x if 5x - 3 = 2x + 9.
2. Express 156% as a mixed number in its lowest terms.
3. Find the area of a triangle with base 8.4 cm and height 6.5 cm.
4. Simplify the ratio 3¾ : 1⅝

5. Simplify: $(a^4 \times a^3) \div a^2$
6. Evaluate: $(-3)^2 \times (-2)^3 + 4^2$
7. Find the value of $2^4 - 3^2 + 5^0 - (-2)^3$
8. The following data represents test scores: 85, 92, 78, 85, 95, 88, 92, 85, 90 Find the range, mode, and median.

[Total = 2 × 8 = 16 marks]

Part B

1. The circumference of a circular garden is 1584 cm. If a path of width 3.5 cm surrounds the garden, find the area of the path. Take $\pi = 22/7$.
2. Determine which pairs of lines are parallel, perpendicular, or neither:
    - Line A: $3y = -2x + 12$
    - Line B: $2y + 3x = 8$
    - Line C: $y = (2/3)x - 4$
    - Line D: $3x + 2y = 15$
3. Solve the equation: $3(2x - 1) = 2(x + 3) + 5x - 11$. Express your answer as a mixed number.
4. In a survey of 240 students, 35% preferred mathematics, 40% preferred science, and the rest preferred literature. If 15% of those who preferred literature also liked mathematics, how many students liked both literature and mathematics?
5. A recipe calls for ingredients in the ratio flour : sugar : butter = 5 : 3 : 2. If 1.8 kg of sugar is used, find the total weight of all ingredients needed.
6. The mean of seven numbers is 24. If six of the numbers are 18, 22, 25, 28, 21, and 19, find the seventh number. If this number is replaced by 35, what is the new mean?
7. In a right triangle, one angle is 37°. If the side opposite to this angle is 18 cm, estimate the length of the hypotenuse. ($\sin 37° \approx 0.6$, $\cos 37° \approx 0.8$)
8. A ship sails from port A on a bearing of 065° for 8 km, then changes course to bearing 155° for 6 km to reach port B. Draw a scale diagram and estimate the direct distance from A to B.
9. Find the area of a trapezium with parallel sides of lengths 12.5 cm and 8.7 cm, and height 6.4 cm.
10. Express 3/8 of 2.4 km in meters and centimeters.
11. A box contains x identical books, each weighing 0.85 kg. If the empty box weighs 1.2 kg and the total weight when full is W kg, write a formula for W in terms of x.
12. A rectangular field is 150m long and 80m wide. Express the area of this field as a percentage of 2 hectares.
13. If $p = -3$, $q = 4$, and $r = -2$, find the value of $2p^2 - 3q + r^3$.
14. A semicircular arch has a diameter of 14 m. Find the area enclosed by the arch and its diameter. Take $\pi = 22/7$.
15. Simplify: $4(2a - 3b) - 3(a + 2b) + 2(3a - b)$

16. A marathon runner maintains an average speed of 12 km/h. If the race is 42.195 km long, how many hours and minutes will it take to complete the race?

[Total = 4 × 16 = 64 marks]

Part C

1. A bag contains colored balls as shown in the table:

Color	Red	Blue	Green	Yellow	Black
Number	8	12	15	5	10

2. (i) What is the probability of drawing a green ball? (1 mark) (ii) What is the probability of drawing either a red or blue ball? (2 marks) (iii) If two balls are drawn without replacement, what is the probability that both are black? (2 marks)
3. Complete the following bill and calculate the total cost:
    - 3¾ kg of rice at Rs. 285 per kg = _____ (2 marks)
    - 1 dozen eggs at Rs. 45 per egg = _____ (1 mark)
    - 2.5 kg of flour at Rs. 168 per kg = _____ (1 mark)
    - **Total cost = _____** (1 mark)
4. The diagram shows a square and rectangle sharing a common side. Given information:
    - Combined area of square and rectangle = 169 cm²
    - The rectangle's length is 5 cm more than its width
    - The square's side length equals the rectangle's width
5. (i) If the width of the rectangle is w cm, write an expression for the total area. (1 mark) (ii) Form an equation and solve to find w. (2 marks) (iii) Calculate the area of the rectangle only. (1 mark) (iv) Find the perimeter of the combined shape. (1 mark)

[Total = 5 × 3 = 15 marks]

Paper = ___/95
Handwriting = ___/05
Total = ___/100